

Snoqualmie River Flood Reduction Project (Snoqualmie 205)

**US Army Corps
of Engineers**



**CITY OF
SNOQUALMIE**







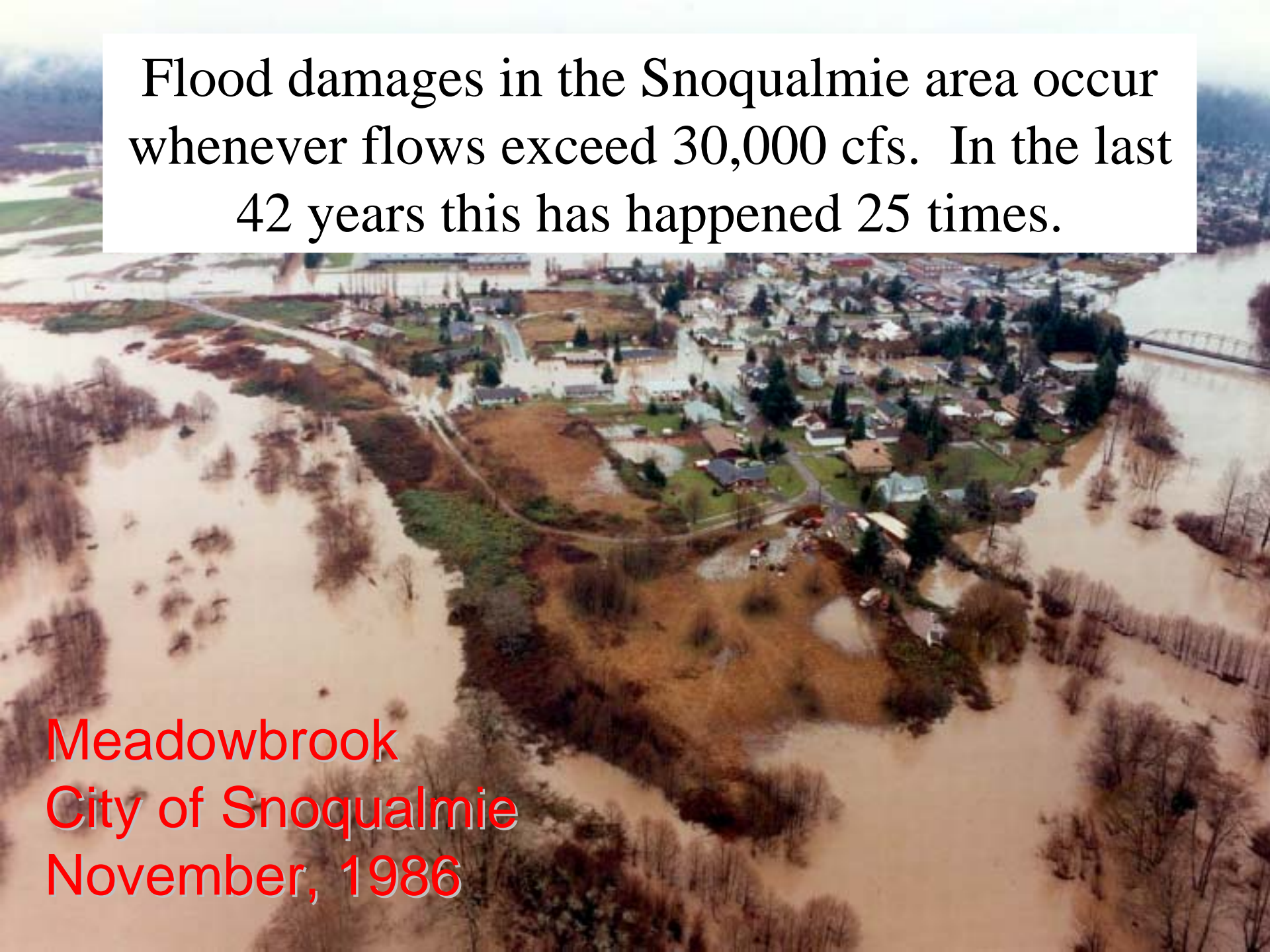
NYE BROS
GENERAL MERCHANDISE

MT SI.
FROM SNOQUALMIE
WASH.

PHOTO BY SUCHIA

Flood damages in the Snoqualmie area occur whenever flows exceed 30,000 cfs. In the last 42 years this has happened 25 times.

Meadowbrook
City of Snoqualmie
November, 1986



More than 1,500 people live on the floodplain
in and around the City of Snoqualmie.
The floodplain includes three public schools,
eight churches, 25 mobile homes,
39 commercial structures, and 577 houses.



Mt. Si High School
City of Snoqualmie
November, 1990

Roughly two-thirds of the homes and businesses in and around Snoqualmie were flooded in November, 1990.



City of Snoqualmie
November, 1990

More flood insurance claims have been paid
in the City of Snoqualmie than in
any other city in Washington State.

Pickering Court
City of Snoqualmie
November, 1986



Long-term annualized flood damages in and around the City of Snoqualmie total an estimated \$1.66 million per year.

Williams Addition
Just Outside City of Snoqualmie
November, 1986



Annualized Snoqualmie Flood Damage Estimates by Corps of Engineers 1998 Prices & Conditions (in thousands)

Homes & Contents	\$ 759	46%
Commercial	\$ 582	35%
Public	\$ 141	8%
Emergency Aid	\$ 100	6%
Other	\$ 78	5%
Total	\$ 1,660	100%

An aerial photograph of a region in Snoqualmie, Washington, showing a river and its floodplains. A blue line traces the 100-year regulatory floodplain boundary, which follows the river's course and encompasses several areas of land, including a large central wetland area and some developed areas. The surrounding landscape is a mix of green forested land, agricultural fields, and some buildings and infrastructure.

100-Year Regulatory Floodplain Boundaries in Snoqualmie

WIDEN
CHANNEL

REMOVE RAILROAD
BRIDGE AND
ELEVATED TRACK

 Excavation Proposed in 1988

Scale

1000 0 1000 2000 ft

Snoqualmie Valley Community Plan

(adopted 1989)

CP- 916 Achieving a long-term solution to flood damages within the City of Snoqualmie is one of King County's highest priorities for this planning area.
(SQP-70)

Flood Hazard Reduction Plan

(adopted in 1993)

COE Channel Excavation Project

- *High Priority Project*
- *Need Detailed Hydraulic Study*
 - ➔ *Information for Decisions*
 - ➔ *Better Define Project Needs*

**SNOQUALMIE RIVER
FLOOD CONTROL PROJECT
PRE-FEASIBILITY INVESTIGATION
*FINAL REPORT***

Prepared for:

**City of Snoqualmie, Washington
King County Surface Management Division
The Weyerhaeuser Company
Puget Sound Power & Light Company
Puget Western, Inc.**

Prepared by:

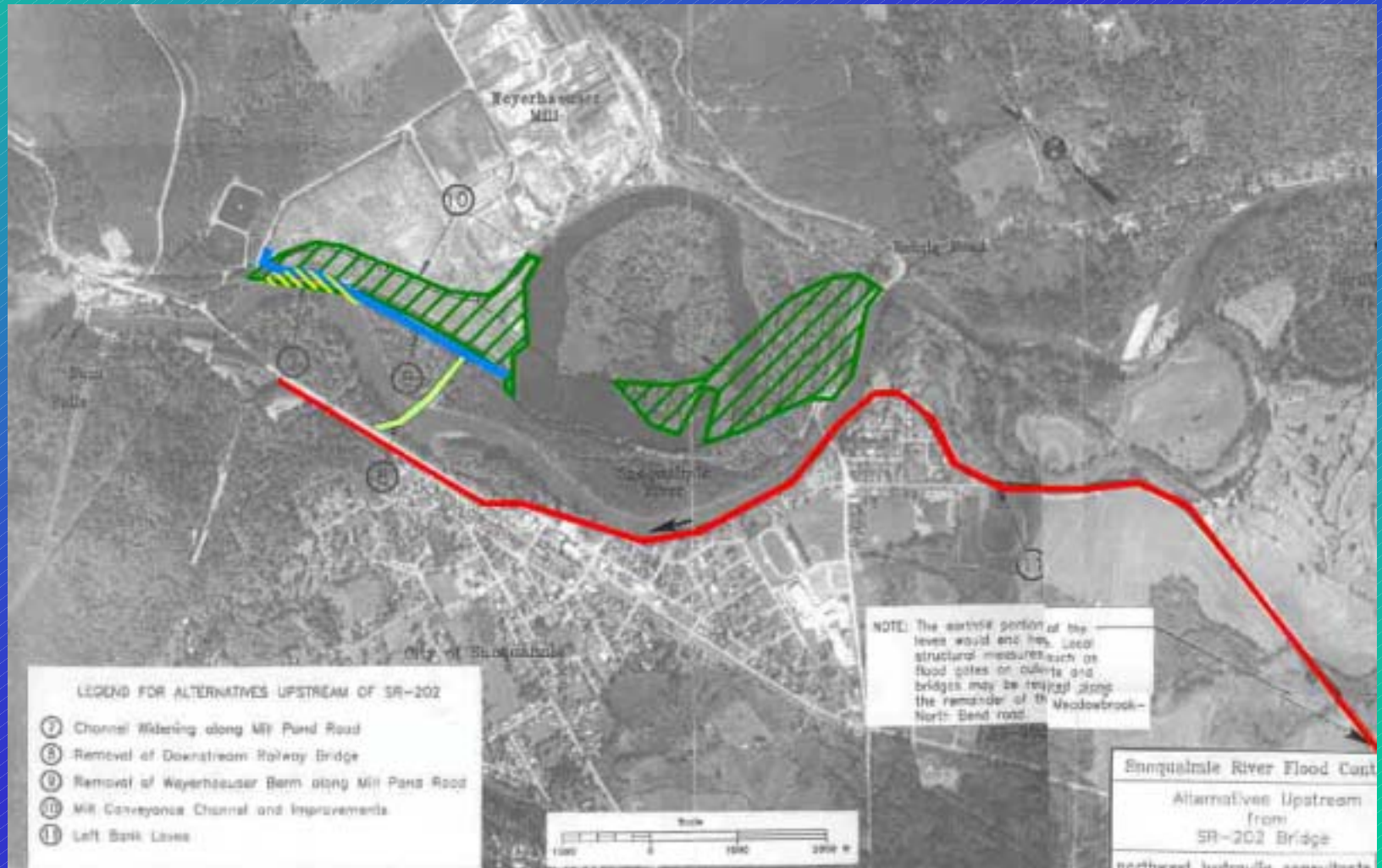
**Northwest Hydraulic Consultants, Inc.
Tukwila, Washington**

March, 1996

Upstream Alternatives

1996 Pre-Feasibility Investigation

Northwest Hydraulic Consultants, Inc.



Downstream Alternatives

1996 Pre-Feasibility Investigation

Northwest Hydraulic Consultants, Inc.



ALTERNATIVE 1 - Right Bank Widening



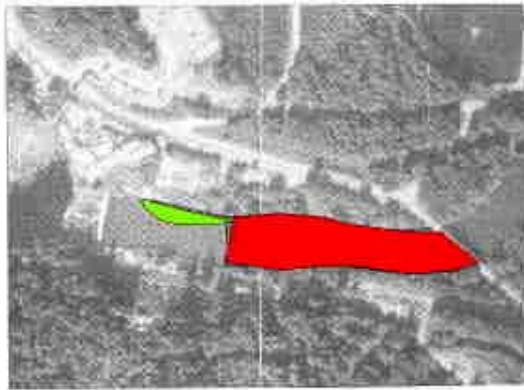
ALTERNATIVE 2 - Left Bank Widening



ALTERNATIVE 3 - Channel Dredging



ALTERNATIVE 4 - Right and Left Bank Widening



ALTERNATIVE 5 - Right Bank Widening with Dredging



ALTERNATIVE 6 - Right and Left Bank Widening with Dredging

WIDEN
CHANNEL

REMOVE RAILROAD
BRIDGE AND
ELEVATED TRACK

 Excavation Proposed in 2002

 Excavation Proposed in 1988

Scale

1000 0 1000 2000 ft

SNOQUALMIE FLOOD REDUCTION PROJECT

(A.K.A SNOQUALMIE 205 BY U.S. ARMY CORPS OF ENGINEERS)

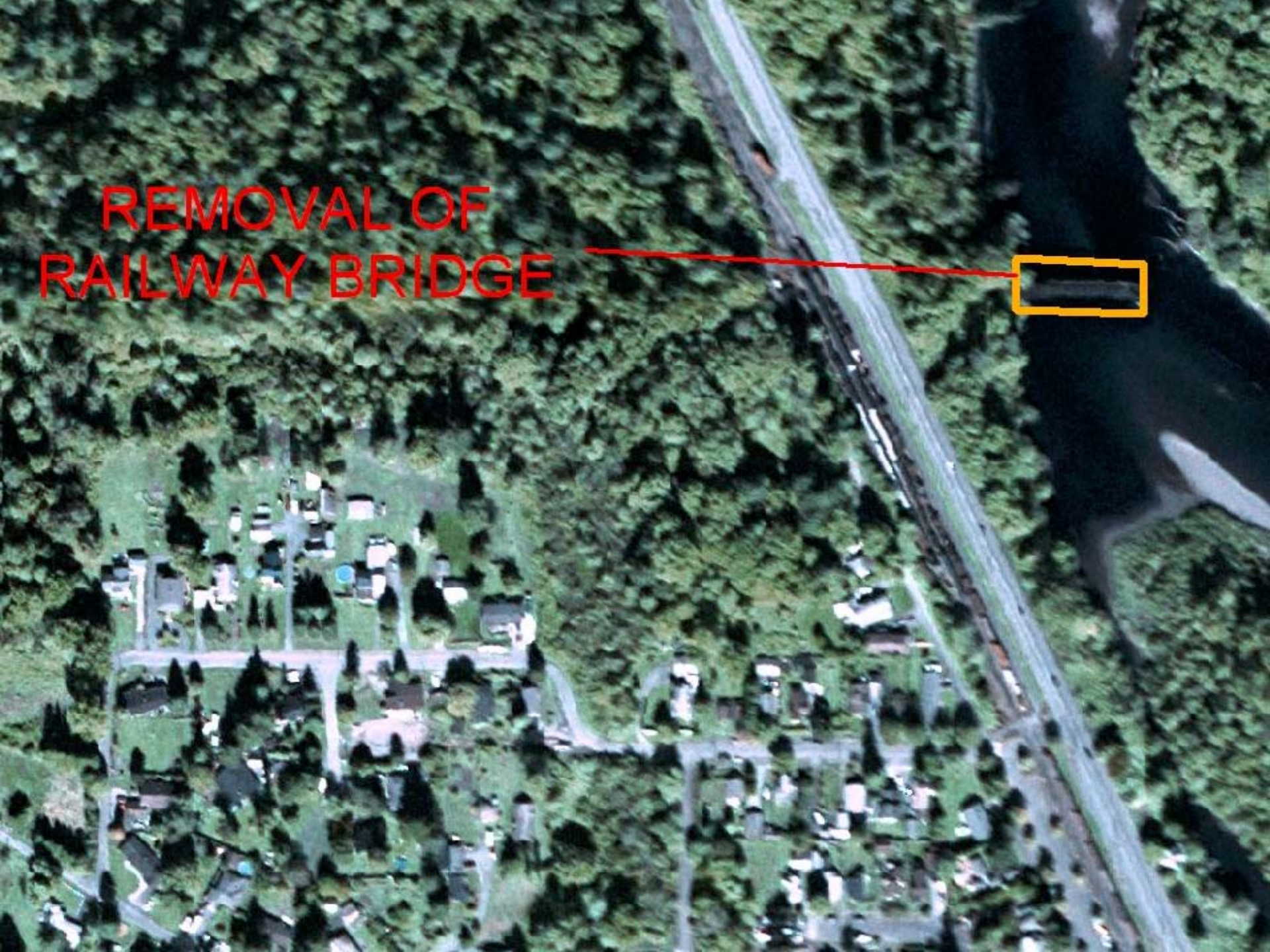


JUNE 2003

RIGHT AND LEFT
BANK VIEWING

REMOVAL OF
RAG DART BRIDGE

REMOVAL OF
RAILWAY BRIDGE





Snoqualmie Channel Excavations

Annualized Flood Damages In Snoqualmie Area

Estimates by U.S. Army Corps of Engineers
for 1998 Prices & Conditions

(in thousands)

Status Quo	\$ 1,660
With Project	\$ 823
Benefit	\$ 837

Snoqualmie Valley Community Plan

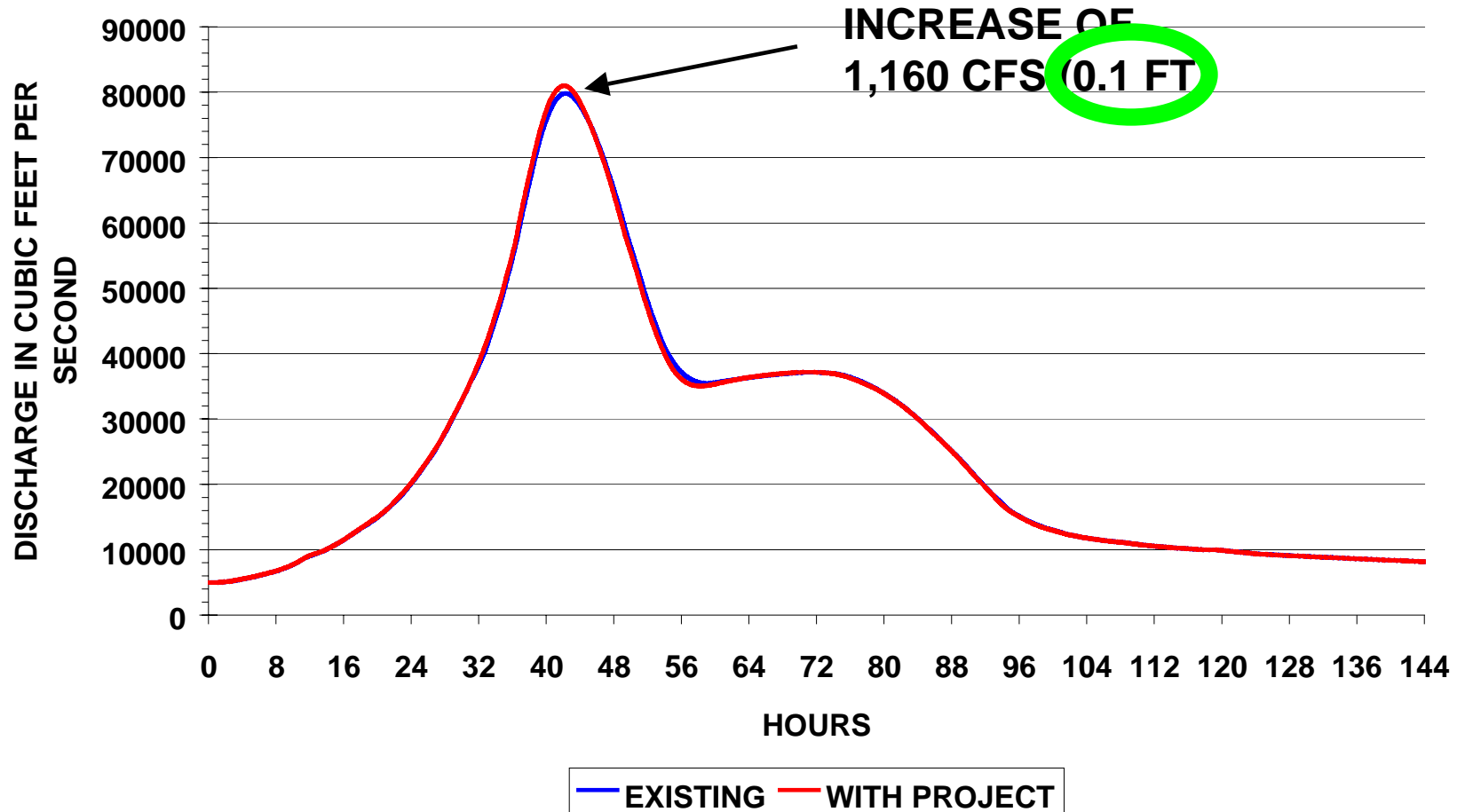
(adopted 1989)

CP- 919 If the long-term solution to flooding problems in the City of Snoqualmie is determined to have basinwide impacts, these impacts shall be reviewed by the King County flood control management plan team or its equivalent to identify any additional mitigations which may be required. If the long-term solution to flooding problems is demonstrated to not have basinwide impacts, it should be implemented as soon as possible and would not require a second, basinwide, review of impacts and mitigations. (SQP-74)

DOWNSTREAM IMPACT ANALYSIS

by U.S. Army Corps of Engineers

SNOQUALMIE RIVER AT SNOQUALMIE FALLS
100-YEAR FLOOD





no impact

< 0.1 ft
deeper

Snoqualmie 205 → > 1.0 ft
shallower



Raging River Confluence
Fall City
November, 1986



Carnation Farms Road
North of Carnation
November, 1986

Snoqualmie 205 Project

Downstream Flood Mitigation

Mitigation Measure

Public Support in 3/00 Survey

Home Elevations

86%

Critter Pads

78%

Gravel Removal (scalp or dredge)

70%

Upland Development Controls

70%

Establish Matching Fund

70%

Fees from Upland Developments

63%

Remove Levees from Mouth of Tolt

57%

Flood Map Updates

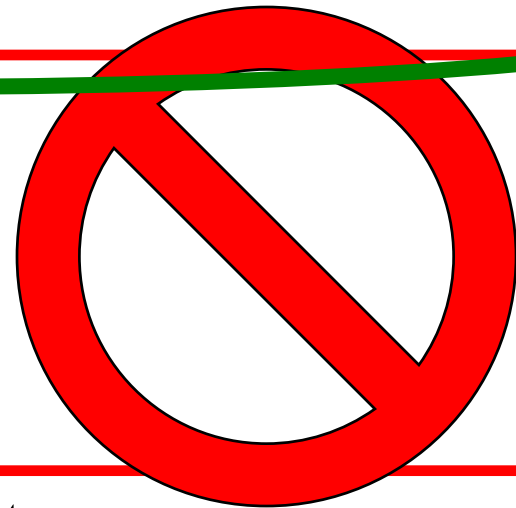
52%

Home Buyouts

50%

Many other alternatives

less than 50%





Kelly Home near Kimball Creek
Just Outside City of Snoqualmie
Summer 2000

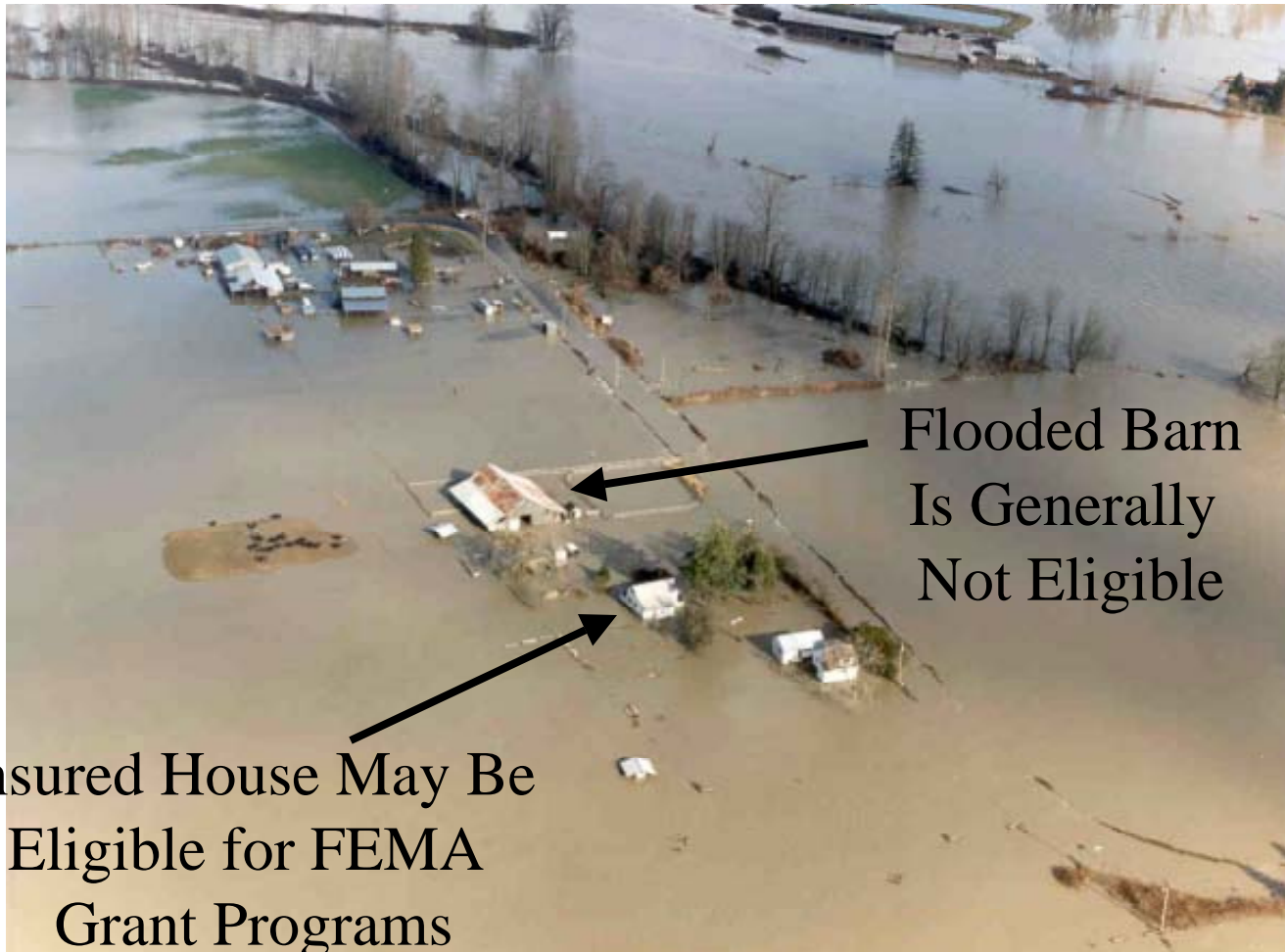


Kelly Home near Kimball Creek
Just Outside City of Snoqualmie
August 2000



Kelly Home near Kimball Creek
Just Outside City of Snoqualmie
September 2000

Issue: Grant Funding Eligibility



Flooded Barn
Is Generally
Not Eligible

Insured House May Be
Eligible for FEMA
Grant Programs

Issue: Grant Funding Priorities

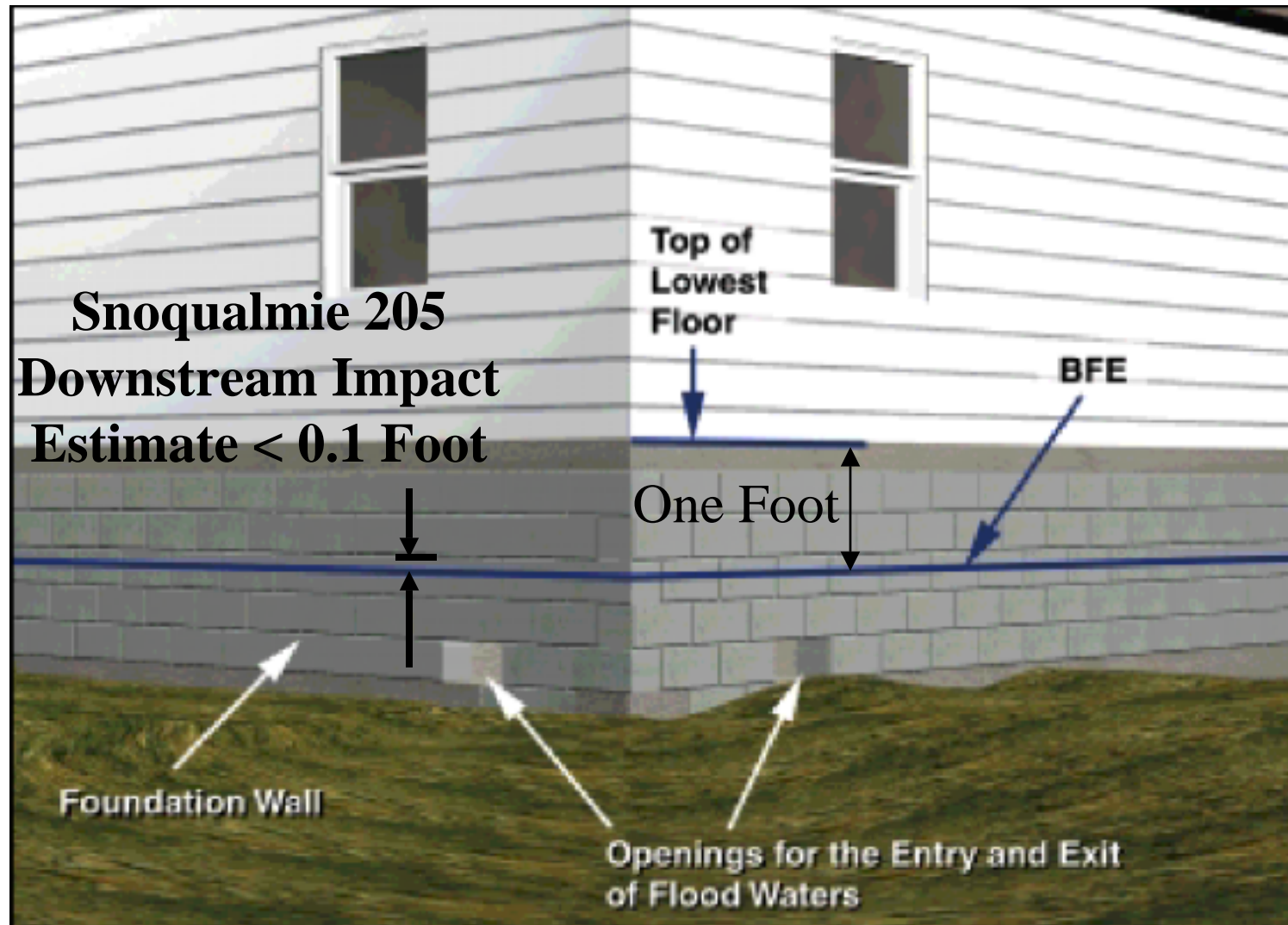
Higher areas
that flood less
often do not
compete as
well for grants.

Flood damages
in low-lying
areas are more
frequent and severe.

This can help to secure
competitive grant funding.



Issue: Project Cost Share



Downstream Assistance Program

Eligibility / Priority

- ◆ All Existing Structures
- ◆ Snoqualmie Falls to County Line
- ◆ Finished Floor Below Mapped Base Flood Elevation of Snoqualmie River

Variable Cost Shares

- ◆ Depending Upon Participation

Downstream Assistance Program Budget

US Army Corps
of Engineers



King County

CITY OF
SNOQUALMIE

\$ 97,500	30%
\$ 115,500	35%
\$ 115,500	35%
<hr/>	
\$ 328,500	100%

Cost Estimates

(in thousands)

Design	\$ 368	9%
Land Acquisition	\$ 281	7%
Utility Relocation	\$ 435	11%
Channel Widening	\$ 1,616	42%
Bridge Removal	\$ 303	8%
Construction Management	\$ 363	9%
Downstream Assistance	\$ 329	8%
Other	\$ 185	5%
Total	\$ 3,880	100%

Cost Share Estimates

(in thousands)

**US Army Corps
of Engineers**

\$2,253

58%



King County

\$902

23%

**CITY OF
SNOQUALMIE**

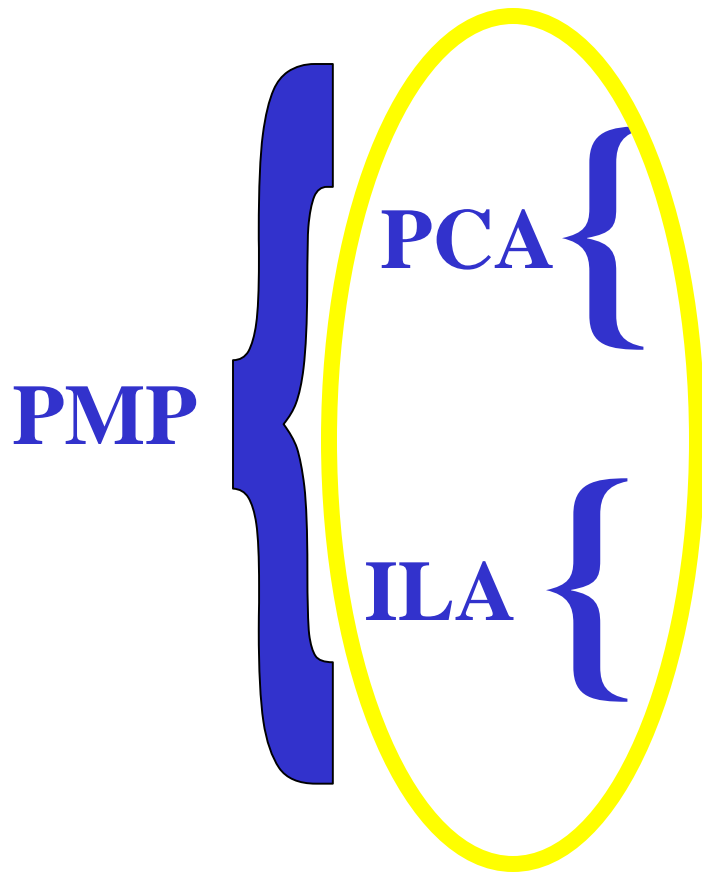
\$725

19%

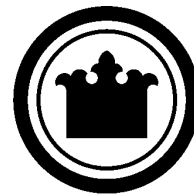
\$3,880

100%

Snoqualmie River Flood Reduction Project (Snoqualmie 205)



**US Army Corps
of Engineers**



King County

**CITY OF
SNOQUALMIE**

Project Cooperation Agreement



King County

**US Army Corps
of Engineers**

Standard Federal Contract King County Responsibilities

- **Minimum 35% Cost Share**
- **Land Rights**
- **Utility Relocations**
- **Operation & Maintenance**
- **Downstream Assistance**

Inter-Local Agreement



King County

**CITY OF
SNOQUALMIE**

**Modeled on Previous ILA
Share Local Responsibilities**

- **Matching Funds**
- **Project Coordination Team**

Project Management Plan

**US Army Corps
of Engineers**



**CITY OF
SNOQUALMIE**

Memorandum of Understanding

- **Not in Proposed Motion**
- **Still in Negotiation**

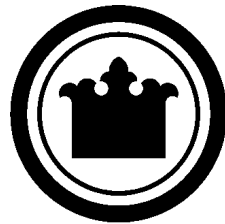
Referenced in Standard PCA

Important Details

- **Decision-Making Process**
- **Field Problems / Changes**
- **Eligibility of Local Expenses**

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King County

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